

AWS Training Topics

Section 1: Cloud computing Introduction

Learning Objective: In this module, you will learn about the different services provided by AWS. You will be provided with an overview of the important resources required to architect an application.

Topics

- History of Cloud Computing
- Concept of Client Server Computing
- Distributed Computing and its Challenges
- What is Cloud Computing?
- Why Cloud Computing?
- Advantages of Cloud Computing

Hands-on Practicals:

- History of Cloud Computing
- Concept of Client Server Computing

Section 2: Cloud Computing Deployment Models

Topics

- Introduction of Private Cloud
- Understanding Public Cloud?
- Overview of Hybrid Cloud?

Section 3: Cloud Delivery/Service Models

Topics

- What is Software as a Service (SaaS)?
- Platform as a Service (PaaS)?
- Infrastructure as a Service (IaaS)?

Section 4: Basics of Linux

Topics

- Basic Linux Commands
- Basic Linux Administration

Section 5: Introduction to AWS Services

Topics

- Amazon Elastic Compute Cloud (EC2)
- Elastic Block Storage (EBS)
- Elastic File System (EFS)
- Amazon Simple Storage Service (S3)
- Amazon Glacier
- Import/Export (Snowball)
- Virtual Private Cloud (VPC)
- Elastic Network Interface (ENI)
- Direct Connect
- Amazon Relational Database Service (RDS)
- Amazon DynamoDB
- Elastic Load Balancing (ELB)
- Route-53
- Simple Notification Services (SNS)
- Server less computing (Lambda)
- Import/Export (Snowball)
- Code Commit
- Cloud Trail
- Elastic Beanstalk
- Cloud Front
- Route-53
- Auto Scaling
- Identity and Access Management (IAM)
- Simple Email Services (SES)
- Simple Queue Services (SQS)
- Simple Notification Services (SNS)
- Elastic Beanstalk
- Server less computing (Lambda)
- Cloud Trail
- Cloud Watch
- Cloud Front
- Cloud Formation
- Elastic Container Registry - Quick Intro
- Elastic Container Service - Quick Intro

Section 6: Introduction to AWS

- AWS Global Infrastructure
- Understanding of Regions & Availability Zones (AZ)
- Overview & Benefits of Edge Locations
- Creating Free Tier Account in AWS

- Introduction of AWS Management Console / CLI / SDK

Section 7: Elastic Compute Cloud (EC2)

Goal: By taking this module, you'll learn about on launching EC2 instances - Linux/Windows in cloud. Also this module will cover creating AMIs, different ways to connect an instance Assigning Elastic IP, hosting a website in EC2

Learning Objective: The following skills should be gained by completing this module:

- Deep knowledge on EC2
- Working with Security, Key Pairs, Tags
- Understanding on Amazon Machine Image (AMI)
- Importance of Elastic IP
- Storage options in EC2

Topics

- Building an Elastic Cloud Computing Windows instance & Linux Instance
- Bootstrapping with user-data
- Security Set up
- Security with Key Pairs
- Working with Security Group
- Different IPs assigned to an Elastic Cloud Computing instance
- Assigning Elastic IPs
- Login/Access to EC2 instance
- Creating your own custom AMI, Registering & Granting access to AMI
- Placement groups
- EC2 instance protection
- Instance Roles
- Elastic Network Interfaces (ENIs)
- Resources and Tags
- Accessing Meta-Data & use cases.

Hands-on Practicals:

- Launch of Linux EC2 instance
- Apache installation
- Securing instance
- Launching webserver
- Launching Windows EC2 instance
- Image creation
- Instance launch from image

- Assign Elastic IP to EC2

Section 8: Elastic Block Storage (EBS)

Goal: By taking this module, you'll learn about the Amazon Elastic Block Store (Amazon EBS) to attach/detach into EC2 instance

Learning Objective: The following skills should be gained by completing this module:

- Understanding of EBS
- Different Types in EBS
- EBS – Snapshots

Topics

- What is Elastic Block Store (EBS)?
- EBS Volume Types
- What is EBS Encryption?
- EBS Performance
- Instance Store volumes
- Instance Stores Available on Instance Types
- Instance Store Usage Scenarios
- Adding Instance Store Volumes to an AMI
- Optimize the Disk Performance
- Create and delete volumes
- Attach and detach volumes
- Mount and Unmount the attached volume
- Increase the volume size
- Create snapshots
- How to Create Volumes & AMIs from Snapshots?
- Cross-Region snapshot copy & use cases.

Hands-on Practicals:

- Creating new EBS block
- Attaching the new block to Linux instance
- Formatting the block
- Using the block for storage
- Handling IOPS details
- Detaching and attaching the block to new instance
- EBS Demo in Windows
- Mount / Unmount the volume
- Switching the block to new zone
- Creating EBS Using snapshots
- Handling the new EBS block for Windows instance

Section 9: Elastic File System (EFS)

Goal: By taking this module, you'll learn about the Amazon Elastic File System (Amazon EFS) to share file data without provisioning or managing storage

Learning Objective: The following skills should be gained by completing this module:

- Understanding of EFS
- Mounting & Unmounting Details
- Security in EFS

Topics

- What is Elastic File System (EFS)?
- Working with EFS resources
- Mounting EFS File Systems
- Managing EFS
- Monitoring file systems
- Data Protection for EFS

Hands-on Practicals:

- Creating a file system
- Deleting a file system
- Creating & managing mount targets
- Creating Security groups
- Creating policies
- Understanding of API

Section 10: Amazon Simple Storage Service(S3)

Goal: By taking this module, you'll learn about the different Storage classes offered by AWS S3, and how to store/transfer data using these classes as well as optimize storage costs.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of Storage classes in S3
- Benefits of S3
- Understanding of components in S3
- Security / Policy in Buckets & Objects

Topics

- How to Create and delete buckets?
- How to Add objects to buckets?
- Getting the objects
- Deleting the objects

- What is Notifications?
- S3 storage and it's usage
- How to Work with Permissions of S3, Access Control, Bucket policy?
- Types of S3 Data encryption
- S3 Objects Enable Versioning and Logging
- Overview of S3 Lifecycle rules
- Accessing the Simple Storage Services with Tools
- How to Host a Static Website?
- Cross-Origin - Resource Sharing
- Cross-region - replication
- AWS CloudTrail - Audit Logging

Hands-on Practicals:

- Creation of S3 buckets
- Loading objects and folders in buckets
- Securing objects
- Using Access policies
- Dealing with access control lists
- Using buckets and objects features
- Creating the bucket as webserver
- Hosting a website in S3
- Access S3 from EC2 Instance
- Cross Region Replication
- S3 command line interface
- Accessing S3 using Python
- Generating Policy using Policy Generator

Section 11: Amazon Glacier

Goal: By taking this module, you'll learn about Amazon Glacier cloud storage classes to understand for data archiving and long-term backup.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of Glacier
- Benefits of Glacier

Topics:

- How to Create Vaults?
- Working with Archives
- Access the Glacier vault using tools
- Backups using Glacier
- Understanding Job Operations

- What is Data Retrieval Policy Operations?

Hands-on Practicals:

- Creation of Glacier vaults
- Working with FastGlacier
- Details on archive id, checksum, location and S3 lifecycle management

Section 12: Virtual Private Cloud (VPC)

Goal: By taking this module, you'll learn about VPC (Amazon Virtual Private Cloud) offers a logically isolated virtual network of your choice, where you define your own IP address range. Creation of subnets, and configuration of route tables and network gateways.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of VPC
- Components in VPC
- Architecting the business requirements into AWS Services
- Depth Knowledge of CIDR and understanding of Ipv4

Topics:

- Setting up the different types of networks in AWS
- Understanding of CIDR
- Working with ipv4 Ip address
- How to Create custom VPC?
- What is NACLs & Security Groups?
- Create Internet Gateway(IGW)
- Connect to instances in the gateway
- What is Subnets, Route Tables & Association?
- NAT Instances & NAT-Gateways
- DHCP Options Sets & DNS
- VPC Peering
- Overview of VPN and its components

Hands-on Practicals:

- Exclusive demo on VPC scenario 1 and Scenario 2
- Creation and configuring the IP Address for VPC
- Creation of subnet
- Configuring route table
- Access S3 from Private Subnet
- Creation of internet gateways
- Security group creation
- Launch of NAT instances
- Launch of NAT Gateways
- Usage of VPC Wizard

Section 13: Elastic Network Interface (ENI)

Goal: By taking this module, you'll learn about Elastic Network Interface (ENI) to create and configure network interfaces and attach to instances

Learning Objective: The following skills should be gained by completing this module:

- Understanding of ENI
- Up the secondary server by using secondary ENI

Topics:

- Understanding of Network Interface
- Use case of ENI
- Enabling Management Traffic by using ENI
- Attach ENI to EC2 Instances

Hands-on Practicals:

- Launch EC2 Instances
- Create ENI
- Attach ENI to EC2 Instance
- Create EIP and attach to ENI
- Detach and attach to secondary Instance

Section 14: Amazon Relational Database Service (RDS)

Goal: By taking this module, you'll learn about a cloud-based relational database can easily be set up, operated, and scaled by Amazon Relational Database Service (Amazon RDS).

Learning Objective: The following skills should be gained by completing this module:

- Relational Database Service in AWS
- Types of DB engines in RDS
- Launching MySQL DB

Topics

- What is DB Instances?
- Select the DB-Engine
- Configure the Database Server
- Creating the Database
- How to Set up automatic backups, snapshots & restores?
- Authorizing access to the DB with RDS Security Groups
- DB Instance Replication
- Security: Using IAM to Manage Access to Amazon RDS Resources
- What is RDS Limits?

- How to Manage MySQL Database server?
- DB Instance Life Cycle: How to Rename a DB Instance
- How to Delete or Reboot a DB Instance?
- Overview of Storage Types
- Upgrade a DB Instance
- Option Groups & DB Parameter Groups
- How to work with Reserved DB Instances?
- Understanding Monitoring
- What is Database Log Files?

Hands-on Practicals:

- Choosing the DB engine
- Selecting the DB version
- Configuring the deployment details
- Using credentials and default DB details
- Configuring VPC and Subnets
- Enabling logs
- Enabling security via security groups and IAM policies
- Usage on upgrades and maintenance window
- Snapshot creation
- Launch of RDS instance in Linux

Section 15: Amazon DynamoDB

Goal: By taking this module, you'll learn about a key-value and document database, DynamoDB is a multi-regional, multi-active, durable database with backup and restore capabilities.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of NO-SQL DB
- Benefits of DynamoDB
- Working on DynamoDB

Topics

- Creating the Database
- How to Set up automatic backups, snapshots & restores?
- Working with Tables & Data
- Working with Items & Attributes
- Working with Queries
- Working with Scans
- Improving Data Access with Secondary Indexes
- DynamoDB Backups

Hands-on Practicals:

- Creating a table

- Insert/Update the data in the console
- Connect DynamoDB from the application
- Enabling logs
- Enabling security via security groups and IAM policies

Section 16: Elastic Load Balancing (ELB)

Goal: By taking this module, you'll learn about Elastic load balancing, applications traffic is automatically distributed across multiple targets such as Amazon EC2 instances, containers, IP addresses, and Lambda functions.

Learning Objective: The following skills should be gained by completing this module:

- Elastic Load Balancer and types of ELB
- Components & Policies in ELB

Topics

- What is ELB?
- How ELB Works?
- Types of ELB
- How to Create load balancer
- What is Internal& External Load balancers?
- Load balancing protocols
- What is Listener Configurations?
- What is SSL Negotiation Configurations?
- How to Attach& Detach Subnets?
- To create Security groups for the load balancer?
- What is Cross-Zone Load Balancing?
- How to Configure health check for the load balancer?
- Sticky Sessions
- How to Add multiple instances to the load balancer?
- Overview of Custom Domain Names?
- What is DNS Fail over?
- Monitoring and Logging
- What is Connection Draining?
- ELB traffic logging

Hands-on Practicals:

- Launching EC2 instances and configure Classic Load Balancer
- Working with Application Load Balancer
- Working with Route53 & ELB

Section 17: Route 53

Goal: By taking this module, you'll learn the concepts of Route53 to manage the traffic.

Learning Objective: The following skills should be gained by completing this module:

- Host the custom domain using Route53

Topics

- Configure Amazon Route 53 as Your DNS Service
- Register a Domain Name and Configure Amazon Route 53 as the DNS Service
- DNS Service Migration for an Existing Domain to Amazon Route 53
- Create a Sub domain that Uses Amazon Route 53 without Migrating the Parent Domain with Public Hosted Zones
- To Work with Private Hosted Zones
- Work with Resource Record Sets
- Overview of Health Checks and DNS Failover
- Health Checks - Creation, Updating, and Deletion
- Transfer a Domain from a Different AWS Account or Registrar
- To Use IAM to Control Access to Amazon Route 53 Resources?

Hands-on Practicals:

- Launch of EC2instance
- Creation of Apache Web server
- Enabling Static IP
- Adding hosted zones
- Fetching name server details
- Linking the name server details with our DNS provider
- Creation ofRecord set
- Using the domain name to see the web pages instead of IP Address

Section 18: Autoscaling

Goal: By taking this module, you'll learn the concepts of Autoscaling

Learning Objective: The following skills should be gained by completing this module:

- Setup and configure Auto-scaling

Topics

- Introduction to auto scaling
- Auto scaling components
- Advantages of auto scaling
- Launch configuration Prerequisites.
- How to Create launch configuration?
- Creation of Auto Scaling Groups (ASG)?
- How to Attach & Detach EC2 Instances in ASG?
- Configure auto scaling policies based on the Load on EC2 instances?
- Auto scaling with Elastic Load balancer (ELB)?

- Removing the Instances Temporarily
- Suspend and Resume Process
- Shut Down - Auto Scaling Process
- Monitoring - Auto Scaling Instances
- Health Checks
- Getting Notifications When ASG Changes

Hands-on Practicals:

- Creation of EC2webservers
- Creation of Load balancer
- Configuring healthy and unhealthy threshold
- Picking the load balancer application, network and classical
- Registering theEC2 instances
- Validation of load balancing
- Configuring Auto scaling
- Creation of Launch Configuration
- Configuring Min,Max and Desired count on instances
- Validation auto scaling

Section 19: Identity and Access Management (IAM)

Goal: By taking this module, you'll learn about AWS Identity and Access Management (IAM) enables you to manage access to AWS services and resources securely.

Learning Objective: The following skills should be gained by completing this module:

- Managing users, groups
- Permissions to allow / deny
- Custom policies to access AWS resources

Topics

- Create user accounts
- How to Set up multi factor Authentication (MFA)?
- IAM Roles
- IAM Groups
- Delegation of User Permissions
- Create of custom policies for delegation
- How to Use Identity Providers?
- Accessing Cross-Account
- Account settings

Hands-on Practicals:

- Creating sub users
- Providing UI and CLI access
- Assigning permissions

- Creating policies in JSON
- Usage of Groups
- Roles revisited
- Password Management
- Overview on MFA

Section 20: Simple Email Services (SES)

Goal: By taking this module, you'll learn about Simple Email Service (SES) that enables to send mail from an application.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of SES
- Use cases of SES

Topics

- How to Set up email domain?
- Limits of Simple Email Services
- Test Email setup

Hands-on Practicals:

- Adding and validating Emails in AWS
- Triggering Emails manually using RAW email feature
- Triggering emails via Python scripts

Section 21: Simple Queue Services (SQS)

Goal: By taking this module, you'll learn about Simple Queue Service (SQS) fully managed message queuing service.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of SQS
- Types of SQS

Topics

- Create a queue
- How to Send messages to the queue?
- Sending Simple Notification Services to Simple Queue Services
- Retrieving messages from Simple Queue Services

Hands-on Practicals:

- Creation of Standard queues

- Configuration of queues
- Handling message pooling
- Creation of FIFO queues
- Accessing the queue via Python scripts
- Pushing and Pulling the messages from queue using Python scripts

Section 22: Simple Notification Services (SNS)

Goal: By taking this module, you'll learn about Simple Notification Service (SNS) fully managed messaging service for both application-to-application (A2A) and application-to-person (A2P) communication.

Learning Objective: The following skills should be gained by completing this module:

- Subscription and send mail to the subscriber
- Create a topic and add SNS

Topics

- Create a topic
- Subscribe to topic via Email
- How to set notification for EC2 instance changes?

Hands-on Practicals:

- Creation of SNS Topic
- Usage of subscription
- Linking the subscription to a topic
- Visualizing the notification using topic

Section 23: AWS Elastic Beanstalk

Goal : By taking this module, you'll learn about AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

Learning Objective: The following skills should be gained by completing this module:

- Understanding of Elastic Beanstalk
- Deploying an application

Topics

- Create Web-App using Elastic Beanstalk
- Build a sample application using Beanstalk
- Modify the properties of deployment
- Deploy v2.0 into Elastic Beanstalk

Hands-on Practicals:

- Creation of Beanstalk Application
- Creation of a new environment under the application
- Launch of a webserver using Beanstalk
- Configuring the environment
- Enabling notification for the environment
- Usage on version control on beanstalk

Section 24: Server less computing (Lambda)

Goal: By taking this module, you'll learn about AWS Lambda is a serverless compute service that lets you run code without provisioning or managing servers.

Learning Objective: The following skills should be gained by completing this module:

- Understanding the functions in Lambda
- Languages to write a code in Lambda

Topics

- Overview of Lambda
- How Lambda works ?
- Benefits of Lambda

Hands-on Practicals:

- Create a function in Lambda
- Trigger the function
- Trigger the function from S3
- Create a function and trigger to start EC2 Instance
- Create a function and trigger to stop EC2 Instance
- Scheduling Auto start/stop the instances

Section 25: CloudTrail

Goal: By taking this module, you'll learn about AWS CloudTrail with log, continuously monitor, and retain account activity related to actions across your AWS infrastructure.

Learning Objective: The following skills should be gained by completing this module:

- Logging the actions

Topics

- How CloudTrail Works?
- CloudTrail Workflow
- Setup & configure CloudTrail

- Benefits of CloudTrail

Hands-on Practicals:

- Enable CloudTrail
- Working with CloudTrail
- Working with CloudTrail Log Files
- Security in CloudTrail

Section 26: CloudWatch

Goal: By taking this module, you'll learn about monitoring service – CloudWatch with how to monitor your resources by effectively.

Learning Objective: The following skills should be gained by completing this module:

- Monitor the services using CloudWatch

Topics

- Debugging cloud issues
- AWS Service Health Dashboard Monitoring
- Cloud watch Monitoring
- How to get statistics for a specific EC2 instance?
- Aggregated statistics
- Metrics for other AWS Services and related namespaces
- How to Set up notifications?

Hands-on Practicals:

- Dealing with metrics of all AWS services
- Creation of Alarm
- Linking the alarm with SNS topic
- Manually triggering an event to validate the alarm and SNS

Section 27: CloudFront

Goal: By taking this module, you'll learn about Amazon CloudFront is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency.

Learning Objective: The following skills should be gained by completing this module:

- Understanding CloudFront
- Enabling CloudFront to your website

Topics

- How Cloud Front Delivers the Content?
- Distributions

- Web Distributions
- How to Work with Objects?
- Request and Response Behavior
- How to Serve Private Content through Cloud Front?
- Accessing Objects using HTTPS Connection
- How to Use IAM to Control Access to Cloud Front Resources?
- Monitor Cloud Front Activity Using Cloud Watch

Hands-on Practicals:

- Creation of Distribution
- Enable of Distribution
- Using S3 bucket for static contents
- Creating root object
- Enabling the HTTP/HTTPS protocols
- Usage of own domain
- Using the Cloud Front URL for accessing the webpage
- Check on statistics

Section 28: CloudFormation

Goal: By taking this module, you'll learn about Amazon CloudFormation to deploy the AWS resources as faster , efficient way and more security.

Learning Objective: The following skills should be gained by completing this module:

- Understanding CloudFormation Templates
- Creation of Stacks
- Deploy the AWS resources in quicker way

Topics

- How to Build AWS infrastructure as a code?
- Components in CloudFormation
- Sample templates - Utilization
- JSON – Introduction
- YAML – Introduction
- Updating Stacks

Hands-on Practicals:

- Create S3 Bucket using CF template
- S3 Bucket with Bucket Name
- S3 Bucket with Retain resources
- Website Hosting in S3
- Create EC2 Instance using CF template
- EC2 Instance with EIP (Update resources by using Change Sets)
- Deploy PHP application